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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/525,141	02/16/2005	Adrianus Sempel	NL 020756	1775

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EXAMINER	
JOSEPH, DENNIS P	

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2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/525,141	SEMPEL ET AL.	
	Examiner	Art Unit	
	Dennis P. Joseph	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 6 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *16 February 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-13* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 February 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 10/525,141.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *9/12/2005 and 2/16/2005*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. This Office Action is responsive to application No. 10/525,141 on February 16, 2005. Claims 1-13 are pending and have been examined.

Information Disclosure Statement

2. The information disclosure statements (IDS) were submitted on February 16, 2005 and September 12, 2005 are being considered by the examiner.

Priority

3. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Claim Rejections – 35 USC § 103

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 103(a) that forms the basis for the rejections under this section made in this Office action:
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:
1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. **Claims 1-3, 5-9, 11-13** rejected under 35 U.S.C. 103(a) as being unpatentable over **Nishigaki et al. (US 6,310,589 B1)** in view of **Berg-johansen (US 2003/0214242 A1)**

6. Nishigaki teaches in Claim 1:

A display device comprising at least one picture element and a display driver device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") comprising a driving transistor (Column 7, Lines 9-11, "A reference current Iref is supplied to transistors **90** and **91**." Figure 4 shows the circuit with the transistor **91**.) to be connected in series with the picture element in a first current path (Column 4, Lines 18-19, "organic thin film EL element **20**" Figure 4 shows the element **20** to be in series with the transistor **91**.), but

Nishigaki does not explicitly teach that "the display driver comprising means for monitoring and controlling the current in said first current path."

However, in the same field of endeavor, displays for luminescent devices, Berg-johansen teaches of an amplifier **330** as shown in Figure 3. This amplifier's output is later coupled to transistor **410** through amplifier **400**. Figure 3 shows the output goes to a current control signal which is input into Figure 4 and amplifier **400**. [0054], "The LEDs are serially connected in groups of three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.") This amplifier **330** can be used to replace transistor **90** as taught by Nishigaki while maintaining the same current path configurations. The current path is designated by line **4**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the operational amplifier as taught by Berg-johansen with Nisigaki's driver circuit by implementing the operational amplifier before the transistor **91** with the motivation that "there is a need for a flexible control unit providing a wide dimming range of light generated in a backlight for an avionics display without requiring high voltages, providing reliable light generation, and that is less sensitive to temperature changes." [0007]. This dimming control is done by the use of operational amplifiers which can output varying levels of voltage.

7. Berg-johansen teaches in Claim 2:

A display device as claimed in claim 1 in which in operation the current in the first current path is controlled by a current simultaneously passing in a second current path. (Figure 3 shows the second current path, line **3**. Both lines are run simultaneously as the amplifier is operated.)

8. Berg-johansen teaches in Claim 3:

A display device as claimed in claim 2 a controlling connection of the driving transistor being coupled to an output of a control amplifier ([0054], "The transistor **410** in turn is driven by an operational amplifier **400**." This amplifier is coupled to amplifier **330**.) each of the input connections of the control amplifier being coupled to the first and second current path respectively. (As shown in Figure 3, the first current path is line **4** and the second current path is line **3**.)

9. Nishigaki teaches in Claim 5:

A display device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") as claimed in claim 1, but

Nishigaki does not explicitly teach that the device "which in operation the current in the first current path is controlled by a charge stored by means of a current having passed in a second circuitry part.

However, in the same field of endeavor, displays for luminescent devices, Berg-johansen teaches "When the input PWM signal has a duty cycle between 0% and 100%, a low pass filter comprised of capacitor C3 **323** and C39 **325** and resistors R7 **322**, R2 **324**, and R6 **319** converts the square wave into a DC voltage inversely proportional to the duty cycle. The DC voltage is provided to amplifier **330** and then to output **350**." [0049] The capacitors store a charge, which is the signal from the PWM and outputs it to displayed.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the capacitors as taught by Berg-johansen with Nisigaki's driver circuit with the motivation that it is common in circuits to use capacitors to store the signals to be displayed on the LEDs.

10. Berg-johansen teaches in Claim 6:

A display device as claimed in claim 5 a controlling connection of the driving transistor (Figure 4, transistor **410**) being coupled to an output of a control amplifier (Figure 3, amplifier **330**. The output of amplifier **330** is the current control signal which is input into amplifier **400**. [0054], "The LEDs are serially connected in groups of three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.") one of the input connections of the control amplifier being coupled to a capacitor storing the control charge. (Figure 3 shows the second current path, line **3**, being coupled to capacitor **C39**.

11. Berg-johansen teaches in Claim 7:

A display device as claimed in claim 5 a controlling connection of the driving transistor (Figure 4, transistor **410**) being coupled to an output of a control amplifier (Figure 3, amplifier **330**. The output of amplifier **330** is the current control signal which is input into amplifier **400**. [0054], "The LEDs are serially connected in groups of three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.") the input connections of the control amplifier being coupled to the capacitor storing the control charge and the first current path respectively. (Figure 3 shows the first current path, line **4**, and the second current path, line **3**, being coupled to capacitor **C39**. Both are inputs to the amplifier **330**.)

12. Berg-johansen teaches in Claim 8:

A display device as claimed in claim 1 the picture element being a luminescent element and the first current determining the luminescence of the luminescent element. (Figure 3 shows

part of the first current path, line **4**, going to the current control signal, which is then inputted into amplifier **400**. [0054], "The LEDs are serially connected in groups of three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.")

13. Nishigaki teaches in Claim 9:

A display driver device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") comprising a driving transistor for driving (Column 7, Lines 9-11, "A reference current Iref is supplied to transistors **90** and **91**." Figure 4 shows the circuit with the transistor **91**.), a picture element (EL element), but

Nishigaki does not explicitly teach that the element "via first current path the first current path being controllable by the current in a second current path related to an input data value for the picture, a controlling connection of the driving transistor being coupled to an output of a control amplifier each of the input connections of the control amplifier being coupled to the first and second current path respectively." He does not teach of an amplifier with inputs corresponding to first and second current paths.

However, in the same field of endeavor, displays for luminescent devices, Berg-johansen teaches of an amplifier **330** as shown in Figure 3. This amplifier's output is later coupled to transistor **410** through amplifier **400**. Figure 3 shows the output goes to a current control signal which is input into Figure 4 and amplifier **400**. [0054], "The LEDs are serially connected in groups of

three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.") This amplifier **330** can be used to replace transistor **90** as taught by Nishigaki while maintaining the same current path configurations. The first current path is designated by line **4** and the second current path is designated by line **3**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the operational amplifier as taught by Berg-johansen with Nisigaki's driver circuit by implementing the operational amplifier before the transistor **91** with the motivation that "there is a need for a flexible control unit providing a wide dimming range of light generated in a backlight for an avionics display without requiring high voltages, providing reliable light generation, and that is less sensitive to temperature changes." [0007]. This dimming control is done by the use of operational amplifiers which can output varying levels of voltage.

14. Nishigaki teaches in Claim 11:

A display driver device as claimed in claim 9 the second current path comprising a current source. (Figure 2 shows the constant current supply **22**.)

15. Nishigaki teaches in Claim 12:

A display driver device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") comprising a driving transistor (Figure 4 shows driving transistor **91**) for driving a picture element (Figure 4 shows the LED **20**), but

Nishigaki does not explicitly teach driving "via a first current path in which in operation the current in the first current path is controlled by a charge stored by means of a current having passed in a second circuitry part.

However, in the same field of endeavor, displays for luminescent devices, Berg-johansen teaches "When the input PWM signal has a duty cycle between 0% and 100%, a low pass filter comprised of capacitor C3 **323** and C39 **325** and resistors R7 **322**, R2 **324**, and R6 **319** converts the square wave into a DC voltage inversely proportional to the duty cycle. The DC voltage is provided to amplifier **330** and then to output **350**." [0049] The capacitors store a charge, which is the signal from the PWM and outputs it to displayed. This is sent through the second current path and controls the first current path.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the capacitors as taught by Berg-johansen with Nisigaki's driver circuit with the motivation that it is common in circuits to use capacitors to store the signals to be displayed on the LEDs.

16. Berg-johansen teaches in Claim 13:

A display driver device as claimed in claim 12 a controlling connection of the driving transistor (Figure 4, transistor **410**) being coupled to an output of a control amplifier (Figure 3, amplifier **330**. The output of amplifier **330** is the current control signal which is input into

amplifier **400**. [0054], "The LEDs are serially connected in groups of three **440** to a transistor **410**. The transistor **410** in turn is driven by an operational amplifier **400**.") one of the input connections of the control amplifier being coupled to a capacitor storing the control charge. (Figure 3 shows the first current path, line **4**, and the second current path, line **3**, being coupled to capacitor **C39**. Both are inputs to the amplifier **330**.)

17. **Claims 4 and 10** rejected under 35 U.S.C. 103(a) as being unpatentable over **Nishigaki et al. (US 6,310,589 B1)** and **Berg-johansen (US 2003/0214242 A1)** as applied to claims 1, 2 and 9 above, and further in view of **Inoue (US 6,469,455 B1)**

18. Nishigaki teaches in Claim 4:

A display device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") as claimed in claim 2 the driving transistor (Column 7, Lines 9-11, "A reference current Iref is supplied to transistors **90** and **91**." Figure 4 shows the circuit with the transistor **91**.), but

Nishigaki does not explicitly teach the driving transistor "being a field effect transistor, the gate connection being the controlling connection."

However, in the same field of endeavor, displays for luminescent devices, Inoue teaches "the current switch 3 and boosting switch 5 are constituted of MOSFET's, and the operations of respective MOSFET's are controlled in accordance with the data signal DATA and reversed data

signal XDATA so as to switch the electric current path of the circuit to thereby conduct the charge and discharge of the capacitor **4**." (Column 9, Lines 55-60) Figure 1 shows the switch **3** to drive the signal to LD **2**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the MOSFET as taught by Inoue with Nisigaki and Berg-johansen's driver circuit with the motivation that the MOSFET "reduces the conventional unstable operation of the current source 1 due to charging and discharging of the capacitor **4**, thereby enabling the stable high speed modulation of the light emitting element **2**." (Column 9, Lines 65-67)

19. Nishigaki teaches in Claim 10:

A display driver device (Column 1, Lines 9-12, "driving circuit for organic thin EL films which is to be used for displaying characters and figures by driving a matrix of EL elements.") as claimed in claim 9 the driving transistor (Column 7, Lines 9-11, "A reference current Iref is supplied to transistors **90** and **91**." Figure 4 shows the circuit with the transistor **91**.) being a field effect transistor, the gate connection being the controlling connection.

Nishigaki does not explicitly teach the driving transistor "being a field effect transistor, the gate connection being the controlling connection."

However, in the same field of endeavor, displays for luminescent devices, Inoue teaches "the current switch 3 and boosting switch 5 are constituted of MOSFET's, and the operations of

respective MOSFET's are controlled in accordance with the data signal DATA and reversed data signal XDATA so as to switch the electric current path of the circuit to thereby conduct the charge and discharge of the capacitor **4**." (Column 9, Lines 55-60) Figure 1 shows the switch **3** to drive the signal to LD **2**.

Therefore, it would have been obvious to a person with ordinary skill in the art at the time of the invention to integrate the MOSFET as taught by Inoue with Nisigaki and Berg-johansen's driver circuit with the motivation that the MOSFET "reduces the conventional unstable operation of the current source 1 due to charging and discharging of the capacitor **4**, thereby enabling the stable high speed modulation of the light emitting element **2**." (Column 9, Lines 65-67)

Conclusions

20. The prior arts made of record and not relied upon are considered pertinent to applicant's disclosure. **Kawakami et al. (5,949,194), Tam (US 2002/0047817 A1), Mikami et al. (US 2002/0140659 A1), Tam (US 2003/0114082 A1), Pramanik (US 2002/0082799 A1), Weindorf (US 2002/0135572 A1)** are cited to teach of an amplifier with current inputs which control the output to an LED.

21. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dennis P. Joseph whose telephone number is 571-270-1459. The examiner can normally be reached on Monday-Friday, 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on 571-272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DJ

AMR A. AWAD
SUPERVISORY PATENT EXAMINER